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Description

The present invention relates to a method of automatically cropping and printing images from negative films on photographic paper in accordance with cropping information, comprising processing signals corresponding to the cropping information by control means, and outputting the signals processed by the control means to control the magnification of optical projection means.

When the image of a negative film frame is printed on a sheet of photographic paper, cropping is sometimes effected by varying the degree of magnification. The conventional printing and cropping operation has heretofore been carried out by an operator in a manual operation in which a portion of a sample sheet of photographic paper or a negative film frame is designated as an area which is to be cropped and the operator effects a printing and cropping operation while visually checking the designated area. Accordingly, this conventional operation involves a disadvantageously low working efficiency and an unfavorably high production cost.

US-A-3 490 844 discloses a method for making a print of a selected portion of a field of view, in which a signal is encoded on the film during the exposure operation indicating this portion of a field of view of which the print is desired. This means, however that it has to be decided about the zone to be printed already during photographic a special view of subject. It is not feasible to make such a decision or to make a special choice when looking on the negative film.

US-A-4 294 637 discloses a photographic printing method, according to which negative film strips or segments of a strip are attached to a paper tab which is provided with for example holes to indicate the location of a frame, the end of a film segment, the end of an order etc. The paper tab together with the attached film segments is then advanced to a neghold assembly at which the frame of the negative film are exposed and prints are made. There is no possibility to make prints from only a special and desired portion of the film frame.

Further, DE-A-3 245 657 discloses a method for adjusting the cropping area of a negative film frame in which a zoom lens of a television camera is used for providing the desired cropping area to be printed on a monitor. This reference, however, does not show how to choose the desired portion of a negative film frame and how to transmit this information for adjusting the zoom lens of the television camera.

Therefore, the object of the present invention is to provide a method of automatically cropping and printing images from negative films on photographic paper which enables a highly efficient printing and cropping operation.

To this end, the invention provides a method of automatically cropping and printing images from negative film on photographic paper of the a.m. kind, comprising the steps of inserting each negative film into an elongated bag-like space of a

transparent negative film sheet, and setting the cropping information relating to the portion of each film frame of the negative film to be printed taken from the customer's order by indicating each cropping frame on the negative film sheet, relative to a frame guide mark provided on the negative film sheet for defining the position of each negative film; reading out and converting the cropping information into electrical signals by input means, inputting the electrical signals to memory means, from there, transferring the signals to the control means; drawing the negative film out from the negative film sheet and feeding it to the optical projection means, and printing on the photographic paper in accordance with the signals converted from the cropping information.

The above and other objects and advantages of the present invention will become more apparent from the following description of the preferred embodiments thereof, taken in conjunction with the accompanying drawings, in which like reference numerals denote like elements, and in which:

Fig. 1 is a perspective view of an order puncher employed in a method of automatically cropping and printing images from negative films on photographic paper according to a first embodiment of the present invention;

Fig. 2 is an exploded perspective view which shows the relationship between a negative film sheet, a negative film and a sheet base;

Fig. 3 is a perspective view of a printer;

Fig. 4 is an exploded perspective view of the portion of the printer in the vicinity of its exposure head;

Figs. 5 to 8 are front elevational views of negative film sheets which are respectively employed in a second to a fifth embodiment of the present invention; and

Fig. 9 is a perspective view of a structure for changing exposure lenses which is employed in a sixth embodiment of the present invention.

Referring first to Fig. 1, there is shown an order puncher 10 which enables inputting of cropping information. The order puncher 10 is arranged such that a negative film sheet 16 which is wound up on a reel 14 can be mounted on a machine board 12.

Referring to Fig. 2, the negative film sheet 16 is constituted by an obverse sheet member 18 and a reverse sheet member 20 which are bonded together in such a manner that elongated bag-like spaces each of which receives a negative film 22 are defined therebetween.

The obverse sheet member 18 is made of a transparent or translucent material so that it is possible for an operator to visually observe negative films 22 inserted inside the negative film sheet 16. The obverse sheet member 18 is printed with partition lines 24 and hooked frame guide marks 25 in such a manner that they indicate positions corresponding to frames 22A of the negative film 22. The obverse sheet member 18 is further provided with printing information

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columns 26 in such a manner that they are disposed on one side of each negative film 22 when it is inserted into the negative film sheet 16. Thus, printing information, such as the number of prints to be made for each frame 22A, can be recorded in the corresponding column 26 with a pencil, pen or the like.

The obverse sheet member 18 in accordance with this embodiment is printed with rectangular cropping frames 28 which are formed by dotted lines, each cropping frame 28 being slightly smaller than each of the frames 22A of the negative film 22. The dimensions of the cropping frame 28 are preferably selected such that each of the sides of the frame 22A is 1.2 to 1.6 times as large as the corresponding side of the cropping frame 28.

Thus, when the negative film 22 is inserted into the negative film sheet 16 and the corners of each frame 22A are aligned with the corresponding frame guide marks 25, each cropping frame 28 enables the customer, for example when he orders, to know the area of the image of the corresponding frame 22A which is to be cropped (see an imaginary cropping frame 30 on the negative film 22 shown in Fig. 2). Accordingly, in the state wherein the negative film 22 is inserted into the negative film sheet 16, it is possible to record cropping designating information (e.g., "cropping") in the printing information column 26 if cropping of the image along the cropping frame 28 is desired.

A plurality of negative film sheets 16 are previously bonded to the surface of a continuous and transparent sheet base 32 in another step. The sheet base 32 is wound up on the reel 14, and the negative film sheets 16 are thereby wound upon on the reel 14 in series.

The order puncher 10 enables the operator to observe the printing designating columns 26 while unwinding the negative film sheets 16 onto an illuminator 34 and to input the cropping designating information recorded in the columns 26 in addition to printing information such as the number of prints to be made and color compensation information onto a paper tape 39 loaded in a punch section 38 of the order puncher 10 by using input buttons 36.

Accordingly, a plurality of negative films 22 and the paper tape 39 in the punch section 38 are synchronized with each other. As shown in Figs. 3 and 4, the paper tape 39 is loaded on a tape reader 42 of a printer 40, while the roll of negative sheets 16, together with the reel 14, is loaded in a negative film carrier section 44, so that synchronism between the paper tape 39 and the negative films 22 is properly maintained.

In the printer 40, the paper reader 42 reads out the printing information and cropping designating information recorded on the paper tape 39, and the signals thus read out are processed in a controller 45 such as to execute an exposure operation with respect to the negative films 22 which are successively drawn out from the negative film sheets 16 and fed to a negative film

carrier body 44A disposed on the optical axis by means of a drive unit (not shown) which is provided on an exposure head 46. After being subjected to exposure, the negative films 22 are successively inserted into the negative film sheets 16 again and wound up on a takeup reel 48.

In the exposure head 46, printing conditions are changed on the basis of the printing information read out, such as the number of prints to be made and the printing compensation information. In addition, the controller 45 causes a motor 49 to rotate a turntable 50 on the basis of the trimming designating information read. The turntable 50 has a plurality of exposure lenses 52 and is arranged such that, when a particular frame 22A of a negative film 22 which is to be cropped is fed to the carrier body 44A, it is possible for an exposure lens 52 for cropping to be disposed on the optical axis so as to print a cropped image on a sheet of photographic paper 54.

The following is a description of the operation of the above-described embodiment.

A person who places an order for prints records the number of prints to be made for each negative frame 22A in the associated printing information column 26. In addition, the customer aligns the corners of the frame 22A with the frame guide marks 25 printed on the negative film sheet 16, and if a picture which is desired to be cropped is within the cropping frame 28, he records cropping designating information in the column 26 and then places an order for a print.

A printing operator inserts these negative films 22 received from the customers into a plurality of negative film sheets 16 and bonds them to a sheet base 32 to form a continuous negative film sheet assembly. The operator unwinds the negative film sheets 16 together with the sheet base 32 from the reel 14 and passes them on the illuminator 34 and, while doing so, he inputs the cropping designating information in addition to the printing information onto the paper tape 39 at the punch section 38.

The paper tape 39 having the information input thereto and the negative film sheets 16 are loaded on the printer 40. At the negative film carrier section 44, the negative films 22 are successively drawn out from the negative film sheets 16 unwound from the reel 14 and are fed to the exposure head 46 so as to be disposed on the optical axis. In the exposure head 46, the printing conditions are changed on the basis of the stored printing information. When cropping designating information is available, the turntable 50 is rotated in such a manner that an exposure lens 52 which has a relatively large magnifying power is disposed on the optical axis. In consequence, a cropped image is printed on the photographic paper 54. The negative films 22 which have been subjected to exposure are returned to the negative film sheets 16 and are wound up on the takeup reel 48.

Referring next to Fig. 5, there is shown a negative film sheet 162 which is employed in a second embodiment of the present invention.

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This negative film sheet 162 differs from that of the first embodiment in that each cropping frame 282 is drawn by each individual customer to a desired size and at a desired angle of inclination by employing a pen or the like. Unlike the first embodiment, therefore, it is possible according to the second embodiment to effect a cropping of any desired size and at any desired angle.

To realize the above-described type of cropping, it is necessary to input various signals to a memory device, such as an X-Y value signal for correcting the amount of offset of the center of the image created by a particular cropping frame 282 from the center of the image representing the entirety of the corresponding negative film frame, a signal which represents the appropriated degree of magnification relative to the size of the image created by the cropping frame 282, and a signal which indicates the angle of inclination of the cropping frame 282.

These signals may be manually input by the operator by employing the order puncher 10 of the first embodiment. Alternatively, the arrangement may be such that the image of a negative film frame is projected by the use of a viewer which is able to vary the projection position, magnification and angle in relation to the negative film 22 and when a position, magnification and angle which are most suitable for the cropping frame 282 are obtained, these optimal values are stored in the memory device by means of a manual or automatic operation.

The information thus input to the memory device is read out by employing the tape reader 42 of the printer 40 of the first embodiment, and the controller 45 controls the exposure head 46 and the negative film carrier section 44 on the basis of the information read out. In such a case, the additional requirement is to provide an alignment means and an angle changing means. The alignment means moves the negative film 22 relative to the negative film carrier body 44A in accordance with the X-Y value signal and aligns the respective centers of the cropping frame 282 and the photographic paper 54 with the optical axis of light for printing, while the angle changing means aligns the respective axes of the cropping frame 282 and the photographic paper 54 by, for example, rotating the negative film 22 in accordance with the angle signal in relation to the particular cropping frame 282.

Further, the size of an exposure mask may be automatically changed in accordance with a selected degree of magnification for cropping.

Fig. 6 shows a negative film sheet 163 which is employed in a third embodiment of the present invention. This negative film sheet 163 is previously printed with a grid of vertical thin lines 283A and horizontal thin lines 283B spaced at predetermined intervals. Thus, it is possible for a customer to designate a cropping frame by drawing a thick line along selected lines of the

grid by which a desired cropped image is defined. This cropping frame can be read in a manner similar to that explained for the above-described embodiment.

Referring next to Fig. 7, there is shown a negative film sheet 164 which is employed in a fourth embodiment of the present invention. This negative film sheet 164 is previously printed with cropping frames 284A, 284B, 284C and 284D by, for example, thin or dotted lines, these cropping frames having different sizes and being set at different angles. Accordingly, it is possible for a customer to select a desired cropping frame and to write a mark or sign representing the selected frame in the printing information column 26.

In this case, the cropping designating information may be handled in a manner similar to that in each of the above-described embodiments.

Fig. 8 shows a negative film sheet 165 which is employed in a fifth embodiment of the present invention. This negative film sheet 165 is previously printed with cropping frames 285A, 285B, 285C and 285D of differing sizes with a common center point, indicated by dotted lines or the like, thereby allowing a customer to select a cropping frame of a desired size. The printing information column 26 is previously printed with symbols A, B, C and D which correspond to the respective cropping frames. Accordingly, it is only necessary for a customer to circle any one of the marks A, B, C and D in accordance with the selected cropping frame and to write the desired number of prints under the circled mark.

Fig. 9 shows an exposure lens changing structure for the exposure head which is employed in a sixth embodiment of the present invention. In this embodiment, a plurality of exposure lenses 152 and 252 are respectively mounted on the distal ends of arms 153 and 253. The proximal ends of the arms 153 and 253 are pivotally supported by respective pins 153A and 253A. Accordingly, by pivoting the arms 153 and 253 about the respective pins 153A and 253A, it is possible for the exposure lenses 152 and 252 to be selectively disposed on the optical axis so as to cope with the need for various kinds of cropping. It is, as a matter of course, possible to employ a zoom lens or an attachment lens as the variable-magnification optical means, although neither of these lenses is illustrated.

It is to be noted that, although printing information and cropping designating information are stored in the memory device which employs the paper tape in the above-described embodiments, other types of memory means may also be employed for storing information, such as magnetic memory means, e.g., a magnetic tape, a magnetic disk and so forth.

Claims

1. A method of automatically cropping and

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printing images from negative films on photographic paper in accordance with cropping information, comprising processing signals corresponding to the cropping information by control means (45), and outputting the signals processed by the control means to control the magnification of optical projection means (52, 44A), characterized by the following steps:

inserting each negative film into an elongated bag-like space of a transparent negative film sheet (16), and setting the cropping information relating to the portion of each film frame (22A) of the negative film to be printed taken from the customer order by indicating each cropping frame (28, 282, 284, 285) on the negative film sheet, relative to a frame guide mark (25) provided on the negative film sheet for defining the position of each negative film frame (22A);

reading out and converting the cropping information into electrical signals by input means (10), inputting the electrical signals to memory means (39), from there, transferring the signals to the control means (45);

drawing the negative film out from the negative film sheet and feeding to the optical projection means (44A, 52) and printing on the photographic paper in accordance with the signals converted from the cropping information.

2. A method of cropping and printing according to claim 1, wherein the cropping information includes a cropping frame (28) of a predetermined size which is previously printed on the negative film sheet and cropping designating information which indicates whether a negative film frame corresponding to the cropping frame of the negative film sheet should be cropped when it is printed.

3. A method of cropping and printing according to claim 1, wherein the control means (45) moves the respective positions of the negative film and the photographic paper relative to each other on the basis of the amount of offset of the center of the image corresponding to the cropping frame (282, 283, 284) from the center of the image corresponding to the entirety of the negative film frame (22A).

4. A method of cropping and printing according to claim 2, wherein the control means (45) aligns the respective axes of said cropping frame (282, 284D) and the photographic paper in accordance with a signal which represents the angle of inclination of the cropping frame.

5. A method of cropping and printing according to claim 1, wherein the memory means (39) is a paper tape, while the input means (10) is a puncher which inputs cropping information onto the paper tape.

6. A method of cropping and printing according to claim 5, wherein a plurality of the negative film sheet are bonded to a single sheet base (32), which is wound up in the shape of a roll and supplied to the input means and to a printer (40) which effects printing on the photographic paper.

7. A method of cropping and printing according to claim 1, wherein the control means includes

drive means which changes lenses (52) used by the printing optical projection system on the basis of the cropping information read out from the memory means.

8. A method of cropping and printing according to claim 2, wherein the cropping designation information is indicated in printing information columns (28) of the negative film sheet.

9. A method of cropping and printing according to claim 1, wherein the cropping frame which has appropriate size and angles is indicated within space defined between partition lines (24) on the negative film sheet.

10. A method of cropping and printing according to claim 1, wherein the cropping frame is indicated along a plurality of vertical and horizontal lines indicated in advance in each frame on the negative film sheet.

11. A method of cropping and printing according to claim 1, wherein the cropping frame is appropriately selected from various cropping frames indicated in advance in each frame on the negative film sheet.

12. A method of cropping and printing negative films according to claim 1, wherein the cropping frame is appropriately selected from various cropping frames (285A, B, C, D) indicated concentrically in advance in each frame on the negative film frame.

13. A method of cropping and printing according to claim 11 or 12, wherein the desired cropping frame is selected by picking up a mark given to each cropping frame.

14. A method of cropping and printing according to claim 1, wherein the memory means are selected from a paper tape, magnetic means and optical means.

Patentansprüche

1. Verfahren zum automatischen Zuschneiden und Abziehen von Bildern von Negativfilmen auf fotografisches Papier entsprechend einer Zuschneideinformation, bei welchem Verfahren Signale, die der Zuschneideinformation entsprechen, durch Steuerungsmittel (45) verarbeitet und die von den Steuerungsmitteln verarbeiteten Signale ausgegeben werden, um die Vergrößerung von optischen Projektionsmitteln (52, 44A) zu steuern, gekennzeichnet durch folgende Schritte:

Einsetzen jedes Negativfilmes in einen langgestreckten taschenartigen Raum eines transparenten Negativfilmblattes (16) und Setzen der Zuschneideinformation bezüglich des Bereiches jedes Filmrahmens (22A) des abzugehenden Negativfilms anhand der Kundenbestellung dadurch, daß jeder Zuschneiderahmen (28, 282, 284, 285) auf dem Negativfilmblatt bezüglich einer Rahmenführungsmarkierung (25), die auf dem Negativfilmblatt zum Definieren der Position jedes Negativfilmrahmens (22A) vorgesehen ist, angegeben wird;

Auslesen und Umsetzen der Zuschneideinformation in elektrische Signale durch Eingangsmit-

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tel (10), Eingeben der elektrischen Signale in die Speichervorrichtung (39) von dort aus und Übertragen der Signale zu den Steuerungsmittel (45);

Herausziehen des Negativfilmes aus dem Negativfilmblatt und Zuführen in die optische Projektionsmittel (44A, 52) und Abziehen auf dem Fotopapier entsprechend den von der Zuschneideinformation umgewandelten Signalen.

2. Verfahren zum Zuschneiden und Abziehen nach Anspruch 1, dadurch gekennzeichnet, daß die Zuschneideinformation einen Schneiderahmen (28) bestimmter Größe aufweist, der vorher auf dem Negativfilmblatt gedruckt ist, und eine das Zuschneiden bestimmende Information aufweist, die anzeigt, ob ein Negativfilmrahmen, der dem Zuschneiderahmen auf dem Negativfilmblatt entspricht, beim Abziehen zugeschnitten werden soll.

3. Verfahren zum Zuschneiden und Abziehen nach Anspruch 1, dadurch gekennzeichnet, daß die Steuerungsmittel (45) die betreffenden Positionen von Negativfilm und fotografischem Papier relativ zueinander auf der Grundlage der Größe des Versatzes der Mitte des Bildes, das dem Zuschneiderahmen (282, 283, 284) entspricht, gegenüber der Mitte des Bildes, das der Gesamtheit des Negativfilmrahmens (22A) entspricht, bewegen.

4. Verfahren zum Zuschneiden und Abziehen nach Anspruch 2, dadurch gekennzeichnet, daß die Steuerungsmittel (45) mit den betreffenden Achsen des Zuschneiderahmens (282, 284D) und das fotografische Papiers entsprechend einem Signal übereinstimmen, das den Neigungswinkel des Zuschneiderahmens darstellt.

5. Verfahren zum Zuschneiden und Abziehen nach Anspruch 1, dadurch gekennzeichnet, daß die Speichermittel (39) ein Papierband sind, während die Eingangsmittel (10) eine Stanzvorrichtung sind, die die Zuschneideinformation auf das Papierband gibt.

6. Verfahren zum Zuschneiden und Abziehen nach Anspruch 5, dadurch gekennzeichnet, daß eine Vielzahl von Negativfilmblättern auf einem einzigen Basisblatt (32) befestigt sind, das in der Form einer Rolle aufgewickelt ist und dem Eingangsmittel und einem Abziehgerät (40) zugeführt wird, der das Abziehen auf fotografischem Papier bewirkt.

7. Verfahren zum Zuschneiden und Abziehen nach Anspruch 1, dadurch gekennzeichnet, daß die Steuerungsmittel eine Abtriebsvorrichtung aufweisen, die Linson auswechselt, die vom optischen Abzugsprojektionssystem auf der Basis der von der Speichermitteln ausgelesenen Zuschneideinformation verwendet werden.

8. Verfahren zum Zuschneiden und Abziehen nach Anspruch 2, dadurch gekennzeichnet, daß die das Zuschneiden bestimmende Information in Abzugsinformationssäulen (26) des Negativfilmblattes angezeigt wird.

9. Verfahren zum Zuschneiden und Abziehen nach Anspruch 1, dadurch gekennzeichnet, daß der Zuschneiderahmen, der eine entsprechende Größe und entsprechende Winkel besitzt, innerhalb eines Raumes, der zwischen Trennungslinien (24) auf dem Negativfilmblatt definiert ist, angezeigt wird.

nien (24) auf dem Negativfilmblatt definiert ist, angezeigt wird.

10. Verfahren zum Zuschneiden und Abziehen nach Anspruch 1, dadurch gekennzeichnet, daß der Zuschneiderahmen längs einer Vielzahl von vertikalen und horizontalen Linien angezeigt wird, die in jedem Rahmen des Negativfilmblattes im voraus angegeben sind.

11. Verfahren zum Zuschneiden und Abziehen nach Anspruch 1, dadurch gekennzeichnet, daß der Zuschneiderahmen in entsprechender Weise aus verschiedenen Zuschneiderahmen ausgewählt wird, die in jedem Rahmen des Negativfilmblattes im voraus angegeben sind.

12. Verfahren zum Zuschneiden und Abziehen von Negativfilmen nach Anspruch 1, dadurch gekennzeichnet, daß der Zuschneiderahmen aus verschiedenen Zuschneiderahmen (285A, B, C, D) ausgewählt wird, die in jedem Rahmen des Negativfilmrahmens im voraus konzentrisch angegeben sind.

13. Verfahren zum Zuschneiden und Abziehen nach Anspruch 11 oder 12, dadurch gekennzeichnet, daß der gewünschte Zuschneiderahmen durch Aufnahme einer Markierung, die in jedem Zuschneiderahmen gegeben ist, ausgewählt wird.

14. Verfahren zum Zuschneiden und Abziehen nach Anspruch 1, dadurch gekennzeichnet, daß die Speichermittel aus einem Papierband, einer Magnetvorrichtung und optischen Mitteln ausgewählt werden.

Revendications

1. Procédé de découpage et de tirage automatiques d'images à partir de négatifs, sur un papier photographique, en fonction d'une information de découpage, comprenant le traitement de signaux correspondant à l'information de découpage par un dispositif de commande (45), et la transmission des signaux traités par le dispositif de commande afin que le grandissement du dispositif de projection optique (52, 44A) soit commandé, caractérisé par les étapes suivantes: l'introduction de chaque film négatif dans un espace allongé analogue à un sachet formé d'une feuille transparente d'un film négatif (16), et la détermination de l'information de découpage d'après la partie de chaque image (22A) du négatif qui doit être tirée, d'après l'ordre du client, par indication de chaque cadre de tirage (28, 282, 284, 285) sur la feuille de film négatif, par rapport à un repère (25) de guidage d'image formé sur la feuille du film négatif afin que la position de chaque négatif (22A) soit déterminée,

la lecture et la transformation de l'information de découpage en signaux électriques par un dispositif d'entrée (11), la transmission des signaux électriques à un dispositif à mémoire (39) puis le transfert des signaux de celui-ci au dispositif de commande (45),

l'extraction du négatif de la feuille de film négatif et sa transmission à un dispositif de projection optique (44A, 52), et

le tirage sur papier photographique d'après les

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signaux formés à partir de l'information de découpage.

2. Procédé de découpage et de tirage selon la revendication 1, dans lequel l'information de découpage comporte un cadre de découpage (28) de dimensions prédéterminées qui a été préalablement tiré sur la feuille de film négatif, et une information désignant le découpage, indiquant si un négatif correspondant au cadre de découpage de la feuille de film négatif doit être découpé lors du tirage.

3. Procédé de découpage et de tirage selon la revendication 1, dans lequel le dispositif de commande (45) modifie les positions respectives du film négatif et du papier photographique en fonction de l'amplitude du décalage du centre de l'image correspondant au cadre de découpage (282, 283, 284) par rapport au centre de l'image correspondant à la totalité du négatif (22A).

4. Procédé de découpage et de tirage selon la revendication 2, dans lequel le dispositif de commande (45) aligne les axes respectifs du cadre de découpage (282, 284D) et le papier photographique d'après un signal qui représente l'inclinaison du cadre de découpage.

5. Procédé de découpage et de tirage selon la revendication 1, dans lequel le dispositif à mémoire (39) est un ruban de papier, alors que le dispositif de saisie (10) est une machine perforatrice qui place l'information de découpage sur le ruban de papier.

6. Procédé de découpage et de tirage selon la revendication 5, dans lequel plusieurs feuilles de film négatif sont collées à une feuille unique de base (32) qui est enroulée sur un rouleau et qui est transmise au dispositif d'entrée et à une tireuse (40) qui assure le tirage sur papier photographique.

7. Procédé de découpage et de tirage selon la revendication 1, dans lequel le dispositif de commande comporte un dispositif d'entraînement qui

change d'objectif (52) utilisé dans le système de projection optique de tirage d'après l'information de découpage lue dans le dispositif à mémoire.

8. Dispositif de découpage et de tirage selon la revendication 2, dans lequel l'information de désignation de découpage est indiquée dans des colonnes (26) d'information de tirage de la feuille de film négatif.

9. Procédé de découpage et de tirage selon la revendication 1, dans lequel le cadre de découpage qui a une dimension et une inclinaison convenables est indiqué dans un espace délimité entre des traits de séparation (24) formés sur la feuille de film négatif.

10. Procédé de découpage et de tirage selon la revendication 1, dans lequel le cadre de découpage est indiqué le long de plusieurs traits verticaux et horizontaux indiqués préalablement dans chaque image sur la feuille de film négatif.

11. Procédé de découpage et de tirage selon la revendication 1, dans lequel le cadre de découpage est choisi de façon convenable parmi divers cadres de découpage indiqués préalablement dans chaque image formée sur la feuille de film négatif.

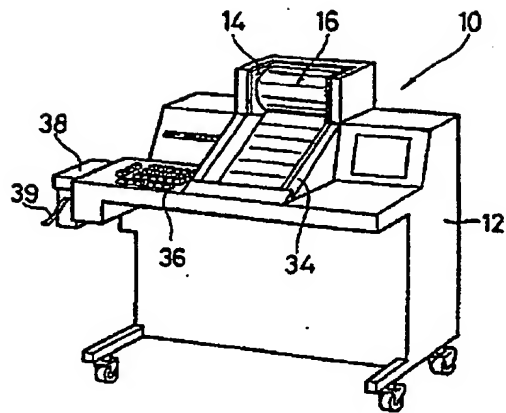
12. Procédé de découpage et de tirage de film négatif selon la revendication 1, dans lequel le cadre de découpage est choisie de façon convenable parmi divers cadres de découpage (285A, 285B, 285C, 285D) indiqués concentriquement à l'avance dans chaque image formée sur la feuille de film négatif.

13. Procédé de découpage et de tirage selon la revendication 11 ou 12, dans lequel le cadre voulu de découpage est choisi par disposition d'un signe sur chaque cadre de découpage.

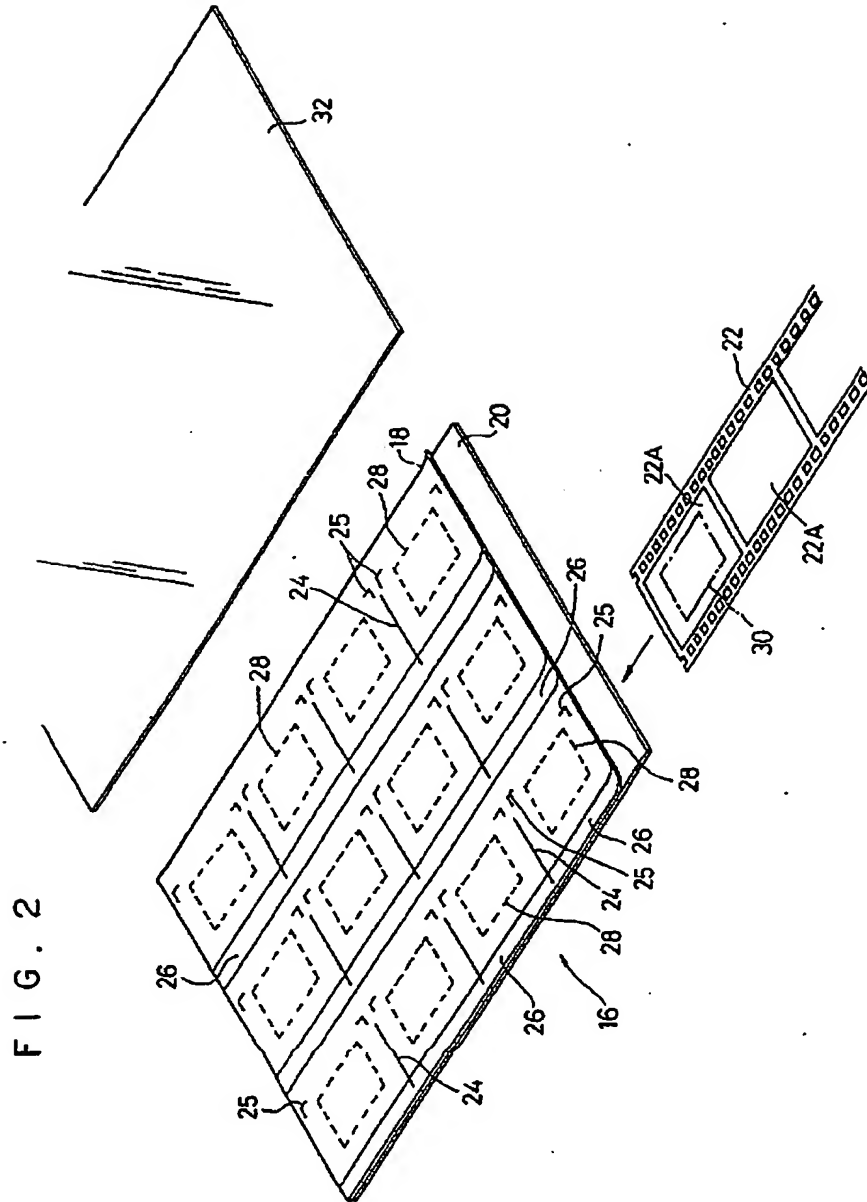
14. Procédé de découpage et de tirage selon la revendication 1, dans lequel le dispositif à mémoire est choisi parmi un ruban de papier, un dispositif magnétique et un dispositif optique.

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FIG. 1

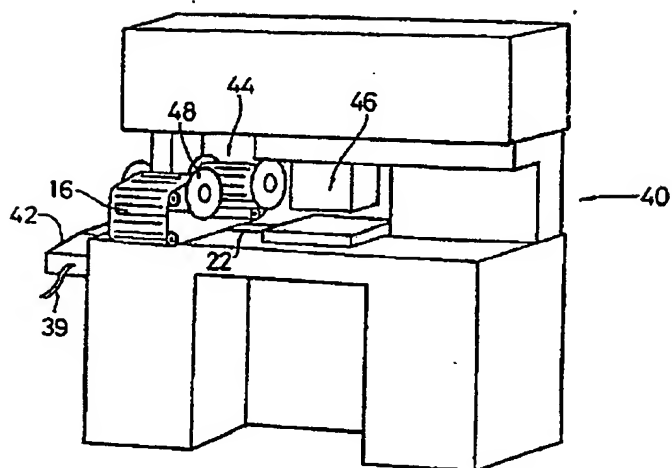


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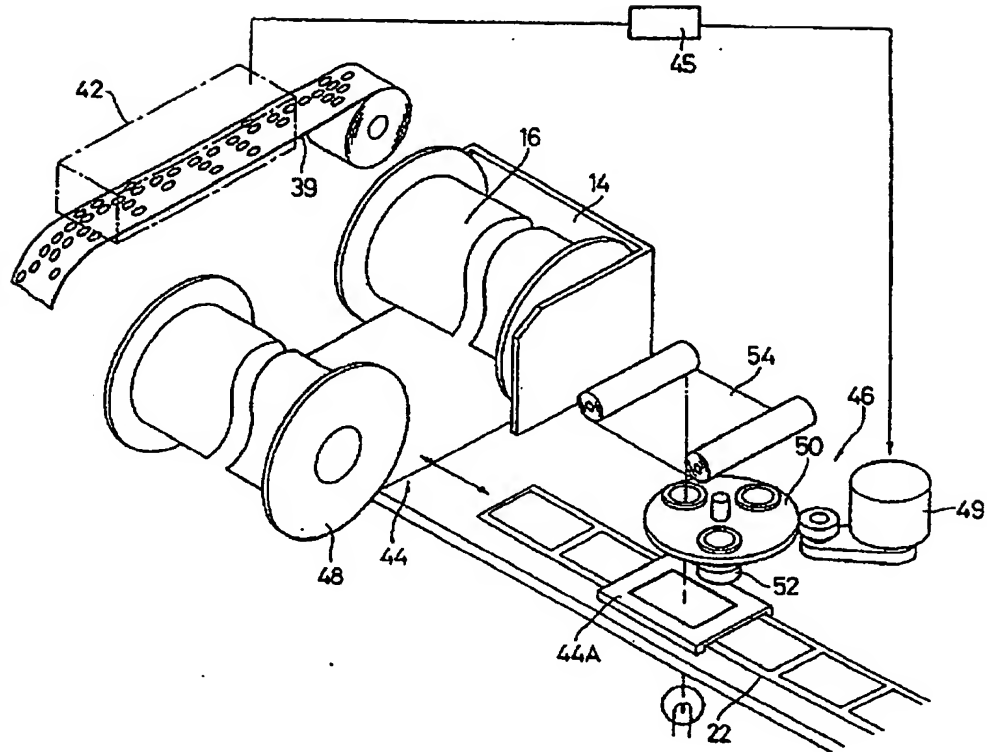
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FIG. 3



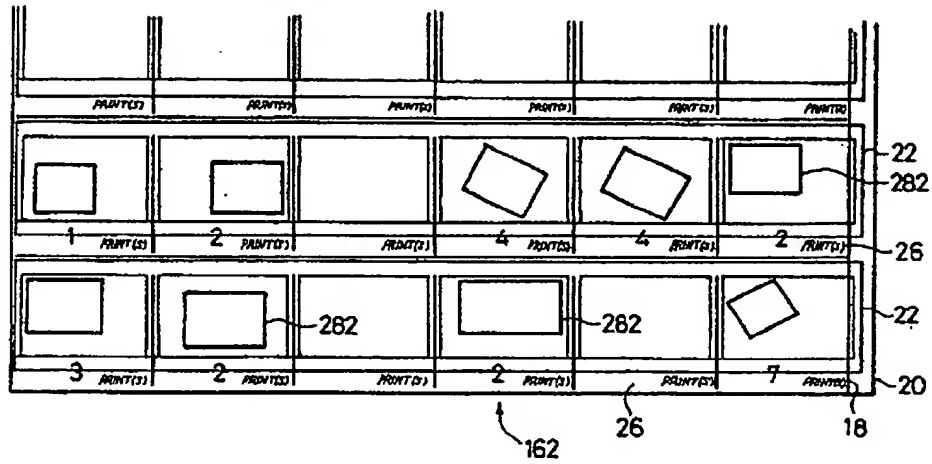
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FIG. 4



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FIG. 5



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FIG. 6

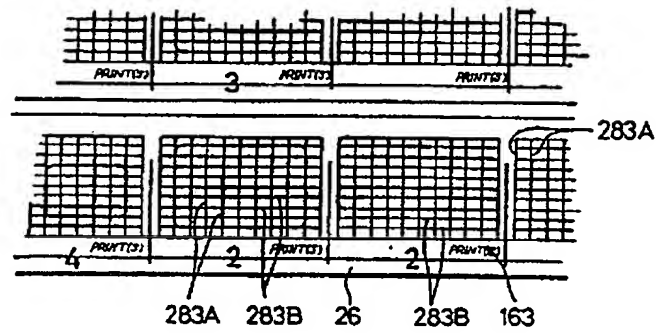
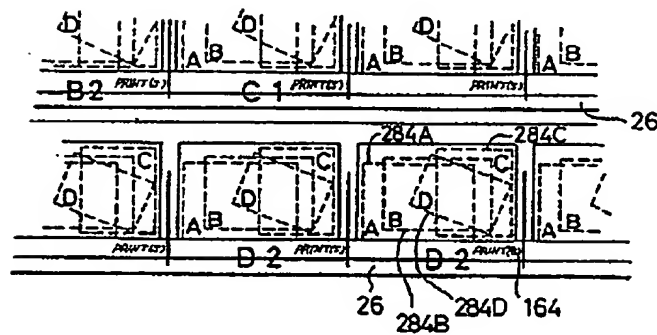


FIG. 7



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FIG. 8

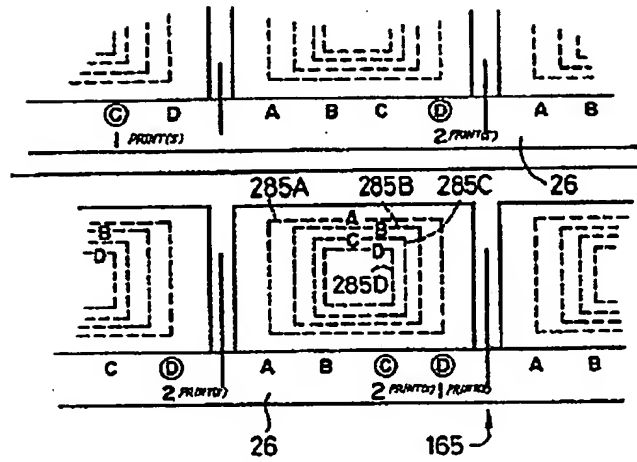
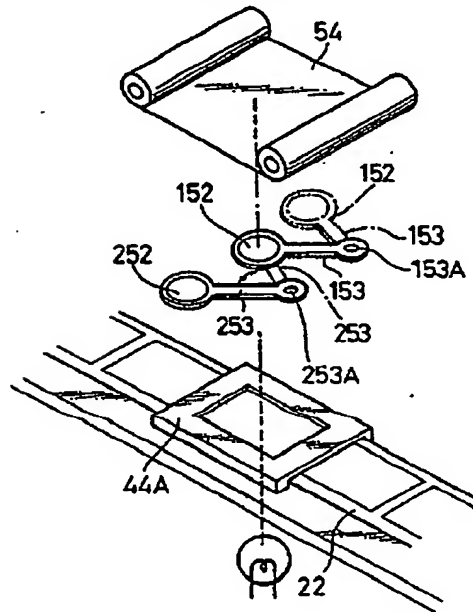


FIG. 9



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